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# The phylogenetic relationships of the hat-shaped ascospore-forming, nitrate-assimilating Pichia species, formerly classified in the genus Hansenula Sydow et Sydow, based on the partial sequences of 18S and 26S ribosomal RNAs (Saccharomycetaceae): the proposals of three new genera, Ogataea, Kuraishia, and Nakazawaea.

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The twenty-seven strains of the hat-shaped ascospore-forming, nitrate-assimilating species, formerly classified in the genus Hansenula, of the genus Pichia were examined for their 18S and 26S rRNA partial base sequencings. All the strains examined were separate phylogenetically from the type strain of P. membranaefaciens (type species of genus Pichia). Based on the sequence data obtained [by number of base differences (five or more) with P. anomala and base sequences on fingerprint segment] in the 18S rRNA partial base sequences, these species were divided into seven groups. Group I, including P. anomala (identical to H. anomala, type species of genus Hansenula), P. canadensis, P. muscicola, P. silvicola, P. subpelliculosa, P. americana, P. bimundalis, P. ciferrii, P. syndowiorum, P. bispora, and P. fabianii, corresponded to the genus Hansenula Sydow et Sydow. Groups II and III were comprised of P. capsulata and P. holstii, respectively. Group IV included P. angusta, P. minuta var. minuta, P. minuta var. nonfermentans, P. philodendra, P. glucozyma, and P. henricii. Groups V, VI, and VII included P. jadinii, P. petersonii, and P. dryadoides, respectively. The nitrate assimilation-negative species, P. wickerhamii was phylogenetically distant from P. membranaefaciens. The seven groupings are discussed phylogenetically and taxonomically. For Groups IV, II, and III, the three new genera were proposed as Ogataea, Kuraishia, and Nakazawaea, respectively, with the type species, O. minuta (identical to P. minuta), K. capsulata (identical to P. capsulata), and N. holstii (identical to P. holstii).

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